

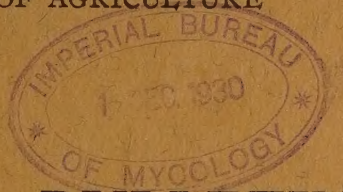
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INTERNATIONAL BULLETIN OF PLANT PROTECTION

DISCOVERIES AND CURRENT EVENTS *

Eritrea: A Disease of Agaves, previously not known in the Colony (1).

There have been recently observed certain affections of the leaves among the Agaves of the Colony, which do not however for the moment give any serious anxiety. The first symptom of the disease is the appearance of yellowish spots, somewhat sunk and covering a fairly large part of the convex side of the leaf. The tissues thus yellowed dry up and assume later a reddish colour although the disease does not extend to the opposite side of the leaf.

On this primary lesion of the tissues, which is not due to the action of pathogenic agents, there always follow infections due to Fungi and to Bacteria which set up disorganisation and blackening of the tissues especially on the concave side of the leaf.

Among the infecting fungi there have been isolated a *Gloeosporium* with its ascigerous form (*Glomerella*), and *Fusarium stictoides*.

Hellenic Republic: Locust Control (2).

The war conditions up to 1923 and the post-war conditions during the five following years, also the agricultural reform have contributed to the fact that the locust control, which is based mainly on obligatory work by the peasants, has not given the results expected.

The locusts multiplied and the devastated areas increased from year to year and hence the damage became more important. In the Department of Phocis and Phiotis alone, the area of which is 5837 square kilometres, with a population of 194 000 approximately, and agricultural products to a value of 442 952 drachmas, the losses caused by locusts were estimated at 300 million drachmas in 1927 and 150 million in 1928.

The Phytopathological Service of the Ministry of Agriculture has continuously suggested and spread the knowledge of all the most effective methods of destroying locusts. The Service has also repeatedly requested the support of the Treasury in order that the control might be as effective as possible.

* In this, as in the two next chapters, the countries are arranged in French alphabetical order.

(1) Communication from the Capo dell'Ufficio Agrario della Colonia dell'Eritrea, Asmara, official correspondent of the Institute.

(2) Communication from the official correspondent of the Institute, Mr. C. A. ISSAAKIDES, Conseiller technique auprès du Ministre de l'Agriculture, Athènes.

In 1929 twenty-seven out of the thirty-five Departments of the country have been declared locust infested ; the State has expended about 50 million drachmas and, further, has detailed troops to control and enforce the compulsory labour.

The locusts causing destruction in the Hellenic Republic are *Calliptamus italicus* and *Docostaurus maroccanus*.

Hatching begins in the plains of the most temperate Departments in the middle of March, and a few days earlier for *Doc. maroccanus* ; it continues in the mountainous parts until July.

The severe cold of the 1929-1930 winter did not affect the vitality of the eggs.

The number of locusts which appeared in 1929 was much greater than in the preceding year. To give a more definite idea it may be stated that in certain Departments in 1929 the swarms were ten times more numerous and the ground covered ten times more extensive than in 1928.

The locusts come down from the hills to the plains ; also when they are not wiped out in one Department they invade the neighbouring Departments.

The Regional Services have been entirely occupied with carrying out control measures and have not had time to study questions with regard to the biology of the locusts. An interesting observation is that the swarms move into the wind when there is very little wind and the temperature is comparatively high, and they fly with the wind when it is strong or the temperature is low ; thus it seems as if the locusts in the former case are endeavouring to refresh themselves and in the latter to avoid fatigue.

The destruction caused by the locusts affects mainly the summer crops, such as tobacco, vegetables, vines, fruit trees (specially the fig, which they completely defoliate), olives, etc. The locusts even attack forest trees.

According to the regulations of Law No. 512 in a Department declared by the Agricultural Council of the Ministry of Agriculture to be attacked by locusts, all the men of the villages are obliged to work for 8 days or longer, and every Dème and Commune is called upon to pay to the Treasury at least 2 % of their annual receipts, this contribution not to exceed 50 000 drachmas from any one Dème or Commune.

The State undertakes all the expense entailed by the control work, the Ministry of Agriculture supplying the requisite orders and instructions in good time for the effective application of the work.

In conformity with these instructions the control methods are as follows :

- (1) petrol spraying the hoppers by means of spraying apparatus ;
- (2) burning them with petrol by means of flame throwers ;
- (3) catching them in nets ;
- (4) spraying with liquid arsenicals and spreading solid arsenical bait.

As a general rule we petrol spray the hoppers during the first twenty days after they form into swarms on the breeding grounds. As in earlier years we have made use of vine sprayers.

For burning the hoppers with petrol we used special flame throwers supplied by the firm of Mr. Carl Platz in Ludwigshafen a. R., or else vine sprayers fitted with flame throwing tubes. The rubber parts were as far as possible and with great advantage replaced by similar parts made of soft leather.

Liquid arsenicals were used only on a very small scale on account of the danger to grazing stock. It is in fact recognised that livestock is poisoned on pasturage which has been sprayed with a solution of sodium arsenite mixed with diluted molasses.

The Vayssière formula was used for dry bait :— bran 100, water 50, molasses 14, sodium arsenite 5, salt 5.

In the Department of Phocis and Phiotis it was found that the bait was more attractive to locusts when it contained a larger quantity of water and molasses. In this Department a bait was prepared with the following constitution:— bran 10, water 50, molasses 28, sodium arsenite 5, salt 5. According to the instructions of the Ministry only up to 15 kg per stremma should be regularly applied, but in a number of cases up to 20 kg of this bait were applied per stremma.

The same instructions state that stock should not be allowed to graze grass-land treated with these poisons for 20 days after their application. In 1929 in addition to large quantities of petrol, 140 tons of sodium arsenite and 570 tons of molasses were used for locust control. The number of days of compulsory work reached a million and of paid work 100 000.

The arsenical baits being applied on a large scale in comparison with previous years a great number of animals, specially sheep and goats, were poisoned. The cause may be largely attributed to the frequently unconscientious work of the peasants who, doing obligatory work, do not distribute the bait uniformly over the whole extent of the ground, but throw it in large quantities in certain places.

The results of the work during the 1929 season were quite satisfactory. In a number of districts 95 % of the locusts were destroyed and only in certain regions as few as 75 %.

The damage on the other hand was insignificant except in the Department of Kozani. The losses in this Department were in the tobacco crops. It may be added that control measures were not as thorough as was necessary in the Department.

The experience gained and the results obtained during the 1929 control work have very clearly shown that future methods of locust destruction must consist of spraying petrol on the swarming hoppers, or burning them with flame throwers, or spreading poison bait uniformly to a maximum extent of 20 kg. per stremma, the last method being equally applicable to hoppers and locusts.

Tripolitania : Locust Invasion and Control (1).

Invasion.— For more than 20 years the presence of locusts (*Schistocerca tatarica* = *Schist. gregaria*) was not reported in the Colony to any alarming extent. The first swarms were announced by the Commissariats of the coast zone from November, 1929. Arrivals in larger numbers were observed from January, 1930 up to the middle of March. The latest flying swarms were reported on 31 March in the mountain zone of Quarto Quassen, near Garian.

In January, the swarms more frequently stopped in the zone lying between Homs, Kussabat and Fonduk Nagazza afterwards at Gars Garabulli, Zanzur and in the zone between Castel Benito-Azizia and Suani ben Adem, where the adults were observed continuously for over a month.

The halt in any one place would last up to four days and the extent of the occupied territory was at times 100 ha.

The invaded localities were usually steppe zones. It was rare for the locusts to halt on cultivated lands. The damage done has been not very considerable. This is due mainly to the fact that during the adult stage, according to observations made in the Colony, the locusts ate little and only in the morning.

(1) Communication from Dr. Vitale DI CAIRANO, Phytopathologist attached to the R. Ufficio per i Servizi agrari della Tripolitania, Tripoli, forwarded by the official correspondent of the Institute, Dr. G. LEONE, Director of the Office.

It is not easy to determine the place of origin and the causes of the immigration of the locusts into Tripolitania. It is believed that, favoured by the wind from the third quarter, they have come from the western portion of North Africa. Having found favourable conditions both for existence and for multiplication of their species, they have remained in the Colony wandering from one point to another of the coast zone, in search of ground more suitable for egg-laying. Such was found generally in the strip of soil separating the dune and the steppe, where the locusts instinctively found the environment most suitable for breeding purposes. In this belt there exists a certain practically permanent degree of humidity as required for embryonal development, as well as vegetation sufficient for nourishing the hoppers up to the period of migrations.

Eggs have been also observed on cultivated lands and on compacted soils.

After the laying, some groups of eggs have been uncovered by the wind; at other times the wind has covered them again with a layer of sand with the result that the eggs are much more deeply buried than when first laid. Consequently hatching occurs more regularly on damp friable soils, where the surface has remained nearly as it was at the time of laying. Eggs uncovered by wind and those found in soil where there has come to be a deficiency of moisture have been dried up.

On compacted soils the hatching has been nearly regular. Hoppers are also hatched equally well from eggs covered by a layer of sand 4 to 5 cm. As the layer tends to increase fewer hoppers emerge.

Eggs were laid first at Gars Garabulli on 9 February, 1930; on 20 February at Zanzur (cabilia Misciasta and Romla); on 22 February at Azizia (Bir Fafia); on 7 March near the zone of reafforestation of Suani ben Adem (km. 25 Tripoli-Azizia); on 13 March at Zanzur (near the Riccio concession); on 14 March at Castel Benito (Calamai concession). Besides these localities which were known at the time of the egg-laying there were others which remained unknown up to the time of the emergence of the hoppers, especially in the zone between Castel Benito-Azizia and Suani ben Adem.

Control Measures. — As soon as the serious nature of the immigration and of the sojourn in the Colony was recognised, the Department of Land Settlement invited the Agricultural Office to prepare a practical and scientific scheme of control measures. The Agricultural Office in its turn arranged for the necessary preliminaries for the submission of the scheme as requested. Following on these it was reported to the Department that the locusts had done only very trifling damage, although remaining for some days on the cultivated lands; it was therefore necessary to give serious attention to the question of whether eggs were laid or not. Provision was thus made in view of the first egg-laying towards the middle of February and the hatching in the first ten days of March. It seemed clear that it was essential to make arrangements to note any possible centres for egg-laying.

For larval control, the suggestion was made that application be made to Italy for arsenite of sodium and for common pumps so as to apply the spraying method which has given such good results everywhere. The Government therefore made arrangements for the purchase of the material indicated, and sent out a circular, containing instructions as to the egg-laying for the subordinate bodies so as to acquaint them with the infested zones.

While waiting for the arrival of the material from Italy the campaign was opened with straw and petrol fires against the adults at Gars Garabulli, in consideration of the fact that the locusts, during the cold mornings, were remaining in masses on the bushes of the steppes without moving.

This procedure gave good results during the cold mornings. On the other

hand when the mornings became warm and the copulation had taken place, it became somewhat less practical and effective. The next idea was to carry on the campaign against the adults at night using small flame guns lent by the Military Engineering Department. But while this system was under organisation, came the first news of the egg-laying, and accordingly the campaign against the adults was abandoned so as to engage as quickly as possible in the more important one against the hoppers.

Just at this time Prof. MARTELLI happened to be in the Colony and suggested the use of poisoned bran in addition to the spraying method, carrying out some experiments of the kind on hoppers some days old; on the result of these the adoption of the method was to depend. In the event of simultaneous hatchings in a number of zones, the poisoned bran method would become essential, as the spraying method was not generally understood.

Good results were obtained from the experiment which was tried out against hoppers on soils approximating to the dune type, and the Governor addressed a circular to the civil and military authorities directing the campaign to be carried out by all means available.

The campaign was not without difficulties in regard to the practical application of the two types of control measures.

The operations, which were begun at Gars Garabulli on 14 April, ended on 3 May. At first control was carried out by spraying, but later, when the locusts also invaded Castel Benito, Suani ben Adem and Zanzur, it became necessary for the reasons indicated to make use of poisoned bran. Spraying with a solution of arsenite of sodium at 2 to 3 per cent was done from 4 to 8 in the morning i. e., when the hoppers were to be found in groups on the bushes and on account of the chill of the morning were not moving about much. This process gave satisfactory results. As soon as the insecticide touched the hoppers they huddled in masses on the bushes and died there under the action of the arsenite of sodium within a more or less short time according to the quantity of the solution employed on them. The next day a dense layer of dead hoppers would be seen under the bushes, while others were lying dead scattered over the sprayed area and also in the neighbourhood.

The bran containing 5 % of poison was scattered early in the morning on the ground surrounding groups of hoppers and when they came down to feed from the bushes where they passed the night they would find and eat the bait. This plan gave good results on ground where there was not enough vegetation to supply the hoppers with food. Otherwise it was necessary to spray, as if the hoppers found natural green food they preferred it to the bait.

The campaign was carried out with the utmost rapidity, with a view to preventing the hoppers from invading the crops.

The violent wind of 26 April however drove the hoppers which had not so far been discovered from the interior of the dunes into the Belli and Bianchi concessions near Castel Benito, on to a zone of about 4 hectares of irrigated land, and damage was thus caused to a vineyard in the course of the migration as well as to the irrigated lands. As soon as this news was reported the poisoned bran was spread everywhere, so as to avoid injury to the crops from spraying.

However it proved necessary to have recourse to this latter method, since in the presence of natural food the hoppers would not touch the bait.

Although the baits involved some additional expense, there was a saving effected in arsenite of sodium as compared with the exclusive use of the spraying method.

The results have been more than satisfactory. The hoppers which represented a serious and certain danger for the crops have been destroyed.

VARIOUS QUESTIONS

DATA AND INFORMATION ON DAMAGE CAUSED TO CULTIVATED CROPS BY THE COLD OF THE WINTER 1928-1929 *

Scotland (1). — The minimum temperature recorded in the months and districts indicated are shown below, in degrees Fahrenheit:

		North	East	West
November	1928	25	16	21
December	»	22	14	20
January	1929	12	3	11
February	»	12	0	8
March	»	21	10	15

The results of the inquiries instituted by the Department indicate that, taking the country as a whole, the damage to cultivated crops in Scotland as a result of last winter's frost is less than was at one time anticipated. It should be noted that oats and barley, which constitute 95 per cent. of the cereal crops, are sown in spring, and were therefore not directly affected by the excessive cold of last winter. In some districts in fact the frost was regarded as rather beneficial than otherwise in its effects, since it broke up the soil and facilitated spring cultivation. In so far as damage was done, it was mainly due to exposure of the crops to the cold winds. In situations where the ground was covered with snow, the damage was generally negligible.

The low temperature did not reduce the numbers of insect pests to any great extent. A fair amount of damage was done by " grub " to oats in the South-eastern districts, and by wire-worm in the West. In the latter area turnip-fly was however less common than usual this season.

Owing to the form of the replies to the Department's enquiry, it is not practicable to deal with the Institute's questionnaire *seriatim*, but the information at the Department's disposal is given below under the heads of the various crops.

Cereals: Wheat, barley and oats did not suffer to any serious extent. In the northern districts November-sown wheat suffered most. It was necessary to re-sow about 20 per cent. of the crop, and of the total crop it was estimated that about 10 per cent. was lost.

Potatoes: In the south-eastern districts pitted potatoes suffered no harm. The chief damage from frost was to tubers in storage or transit, especially where they were inadequately protected and were exposed to cold wind. Severely frosted potatoes became soft and pulpy on the return of warmer weather. The value of potatoes frosted in transit in the eastern districts was estimated at about £5000. In the north, and in some eastern districts a number of potatoes were frosted in pits, the damage being somewhat severe from this cause to King Edwards in pits

* Continued from No. 2.

(1) Communication from the Department of Agriculture for Scotland, Edinburgh, official correspondent of the Institute.

in Fife and East Angus. In the west the planting of early potatoes was delayed by the frost. The potatoes, however, were ready for lifting at the usual time.

Turnips and Swedes: In the eastern districts the feeding-value of turnips and swedes was reduced to some extent by softening of the bulbs, and also by damage to the parts of the plant exposed above the ground. In the south-east turnips in fields suffered little or no damage, but in the western districts stored turnips suffered from frost, and the crop in the fields also deteriorated. In the north, swedes were reported to have suffered less than yellow turnips: the total loss was put at from $7\frac{1}{2}$ to 10 per cent.

Pastures: In most districts pastures came through the cold period very satisfactorily, the damage being generally insignificant. In the north a certain amount of red clover was killed out, particularly plants grown from foreign seed. The total loss was about 10 per cent.

Vegetables: On the whole, vegetables did not suffer to any serious extent from the frost. In Fife and East Angus, however, winter cabbages were an entire failure, and also about 90 per cent. of August-sown vegetables such as onions, cauliflower and Brussels sprouts. No variety was noted as being specially resistant.

The Department have no knowledge of any steps that have been taken to estimate the financial losses attributable to the frost of last winter, nor are they aware of any publication that has been issued on the subject.

Latvia (1). — According to the information supplied by the State Meteorological Service the following minima temperatures were registered at Riga-Spilve Priekuli (near Cesis, Wenden), Cirava and Liepaja (Libau) during the months of January, February, March and April, 1929:

Liepaja (Libau)			Cirava			Riga-Spilve			Priekuli		
31.	I.	—17,7° C	31.	I.	—21,0° C	31.	I.	—19,1° C	31.	I.	—20,4° C
10.	II.	—28,4° »	9.	II.	—32,0° »	10.	II.	—28,3° »	6.	II.	—31,3° »
7.	III.	—18,3° »	7.	III.	—27,0° »	11.	III.	—23,1° »	7.	III.	—21,8° »
6.	IV.	—8,2° »	9.	IV.	—11,7° »	6.	IV.	—9,3° »	2.	IV.	—12,1° »
4.	V.	—0,8° »	4.	V.	—2,2° »	4.	V.	—1,0° »	4.	V.	—0,8° »

The average February temperatures of the Western and Eastern parts of Latvia were respectively 10° and 12° C. lower than the normal average observed over a number of years past. The absolute minimum temperature, —36.5° C., was observed in February in the region situated between Koknesa and Plavispas. Winter cereals (rye and wheat) were not seriously affected by the cold; but great damage was done to the orchards, from 10 to 50% of the apple trees, from 10 to 90% of the pear trees, 10 to 100 % of the plum trees and from 70 to 100 % of the cherry trees being destroyed.

Sensibility to the cold varied considerably according to the varieties.

APPLE. — 1. **Resistant varieties:** Antonovka, Borovinka [Charlamovsky], Danziger Kantapfel, Dorpater Rosenapfel, Gestreifter Winterapfel, Grauer Anisapfel, Himbeerapfel, The Queen, Gravenstein de Livonie, Reinette de Lithuanie, Roter Anisapfel, Astracan rouge, Ruhm von Kirchenwerder, Suisleper, Titovka, Virginischer Rosenapfel, Wealthy, Weisser Klarapfel.

(1) Communication from the official correspondent of the Institute, Mr. M. EGLITS, Director of the Institute for Plant Protection, Riga.

2. Varieties showing slight damage: Aekerö, Aport, Bismarckapfel, Reinette de Caux, Edelborsdorfer, Ernst Bosch, Fameuse, Grosser Bohnapfel, Grosser Mogul, Grüner Klarapfel, Reinette de Landsberg, Serinka, Borsdorfer de Leipsic, Borsdorfer de Livonie, Nitschners Erdbeerapfel, Rambour de Paris, Reinette dorée de Peasgood, Prinzenapfel, Revaller Birnenapfel, Rigaer Milckapfel, Calville rouge d'automne, Signe Tillisch.

3. Varieties showing severe damage or destroyed: Reinette de Baumann, Reinette dorée de Boideker, Boikenapfel, Cellini, Cludius Herbstapfel, Belle fleur jaune, Gelber Richard, Reinette dorée Baron de Berlepsch, Reinette grise, Gravenstein, Reinette de Grime, Reinette des Carmes, Sans-pareille de Langton, Northwestern Greening, Reinette d'Oelkofer, Reinette Simirenko, Reinette de Ribston, Rosenhäger, Roter Stettiner, Roter Frierischer Weinapfel, Scharlachrote Reinette, Belle de Boskoop, Schoolmster, Strumilovka permain dorée.

SIBERIAN CRAB. — Resistant varieties: Général Grant, Hyslop, John Downie, Impérial de Paul, Transcendent.

PEAR. — 1. Varieties not seriously damaged: Feigenbirne, Bergamotte d'automne, Beurré vert de Livonie, Bergamotte d'été.

2. Varieties somewhat considerably affected: Bon Chrétien d'hiver (Apothekerbirne), Beurré de Bausk, Beurré d'Apremont, Favorite de Clapp, Beurré gris, Iljinka, Kernlose, Beurré de Livonie, Weinbirne de Livonie, Pfundbirne, Prémices de Marce Lesueur, Prinzebirne, Weisse Livländische Schmelzende, Bergamotte d'hiver.

3. Varieties very severely affected or destroyed: André Desportes, Beurré d'Amanlis, Beurre Hardy, Beurré Clairgeau, Conférence, Beurré Diel, Docteur Jules Guyot, Bergamotte Espéren, Louise Bonne d'Avranches, Holzfarbige Butterbirne, Mouille bouche, Beurré d'hiver de Liegel, Beurré Napoléon, Duchesse d'Angoulême, William.

AGRIOT. — Varieties fairly resistant: Lotkirsche, Ostheimer Weichsel, Rouge de Mai.

CHERRY. — Varieties seriously damaged or destroyed: Bigarreau jaune de Dregan, Bigarreau Napoléon, Flamantine, Guigne noire de Krüger, Duchesse, Ochsenherzkirsche.

RED CURRANT. — Resistant Varieties: Abondante de Fay, Rouge de Hollande, Rouge de Versailles.

BLACK CURRANT. — Resistant varieties: Baldwin, Bang up, Géant de Boskoop, Goliath, Prolifique blanc de Lee, Noir de Naples, Rosenthals Langtraubige Schwarze.

PLUM. — 1. Varieties seriously damaged: Frankfurter Pfirsichzweitsche, Early Prolific, Gelbe Eierpflaume, Duke of Edinburgh, Reine Victoria, Livländische gelbe Eierpflaume, Reine Claude verte, Reine Claude d'Oullins, Early Favorite, Le Czar.

2. Varieties destroyed by the cold: Reine Claude d'Althan, Anna Späth, Reine Claude de Boddaert, Bühler Frühzweitsche, Goutte d'or de Coë, Esslinger Frühzweitsche, Hartwiss' gelbe Eierpflaume, Jefferson, St. Catherine, Wangenheims Frühzweitsche, Washington.

MIRABELLE. — Destroyed by the cold: Herrnhäuser doppelte Mirabelle, Mirabelle de Metz, Grosse Mirabelle (Mirabelle de Nancy).

GOOSEBERRY. — Resistant or only slightly affected.

RASPBERRY. Partially damaged.

STRAWBERRY. — Resistant.

ORNAMENTAL TREES AND SHRUBS. 1. Species slightly affected

Abies balsamea Mill., *A. concolor* Lindl. et Gord., *A. Fraseri* Lindl., *A. subalpina* Eng., *Acer Pseudoplatanus* L., *Aesculus Hippocastanum* L., *A. Pavia* L., *Ailanthus glandulosa* Desf., *Amygdalus nana* L., *Azalea mollis* Bl., *A. pontica* L., *Buxus fruticosa*, *B. sempervirens arborescens* (Mill.) [in part destroyed], *Carpinus Betulus* L., *Chamaecyparis Lawsoniana* Parl., *Cornus paniculata* L'Hér., *Crataegus* L. [diff. spp. damaged, part destroyed], *C. sanguinea* Pall., *Cydonia japonica* Pers., *Diervilla amabilis*, *Evonymus europaeae* L., *Forsythia Fortunei* Ltd., *F. suspensa* Wahl., *Fraxinus excelsior* L., *Hedera Helix* L., *Hippophaë rhamnoides* L., *Juglans cinerea* L., *Juniperus communis f. columnaris*, *Laburnum alpinum* Grisb., *L. vulgare* Grisb., *Mahonia Aquifolium* Nutt., *Malus floribunda atrisanguinea*, *M. floribunda purpurea* Barbier, *Morus alba* L., *Philadelphus Lemoinei* Lem., *Picea Engelmannii* Engelm., *P. excelsa* Lk., [here and there damaged], *Populus nigra fastigiata* Desf., *Prunus japonica albiplena* Hort., *P. japonica roseiplena* Hort., *P. pissardii nigra*, *P. triloba plena*, *Pseudotsuga Douglasii* Carr., *Pterocarya caucasica* C. A. Mey., *P. fraxinifolia* Spach., *Quercus Robur* L. [here and there damaged], *Rhododendron catawbiense* Michx., *Rh. hybridum coelestinum*, *Robinia Pseudacacia* L., *Rosa canina* L., *R. rubiginosa*, *Sambucus nigra* L., *Symphoricarpus orbiculatus* Moench, *Taxus baccata f. fastigiata* Loud., *Thuja orientalis* L., *Th. occidentalis* L. [resistant], *Thuyopsis dolabrata* S. et Z., *Tilia tomentosa* Much., *Ulmus montana* With.

2. Species seriously damaged or destroyed. *Abies Nordmanniana* Lk., *A. pectinata* D. C., *Andromeda* [diff. spp. destroyed], *Crataegus* [diff. spp. destroyed], *Deutzia gracilis* S. et Z., *Ligustrum vulgare* L., *Magnolia Soulangeana* [destroyed], *Picea orientalis* Lk., *Pinus halepensis*, *P. pinea*, *Prunus Mahaleb* L., *P. Persica* Lieb. et Zucc. [destroyed], *P. triloba* Lindl., *Rhododendron* [diff. spp. destroyed], *Rosa rugosa* Thbg., *Sambucus racemosa* L., *Sophora* [diff. spp. destroyed], *Symphoricarpus racemosus* L., *Tamarix* L. [diff. spp. frozen], *Taxus baccata* L.

EURYGASTER SPP. AND THE DAMAGE THEY CAUSE TO CEREAL CROPS IN DIFFERENT COUNTRIES *

Australia (New South Wales) (1). — We have no record of *Eurygaster* attacking wheat in Australia and so far as I can ascertain the genus does not occur here in New South Wales.

Australia (Tasmania) (2). — *Eurygaster integriceps* is unknown in this State at present.

South Australia (3). — So far as I am aware, *Eurygaster* has not been recorded as attacking cereals in South Australia.

Western Australia (4). — Our wheat is free of *Eurygaster*, no species of this genus being known to attack cereals grown in the State of Western Australia.

* Continued from No. 4.

(1) Communication from the official correspondent of the Institute, Mr. W. B. GURNEY, B. Sc., F. E. S., Entomologist, Department of Agriculture, Sydney, New South Wales.

(2) Communication from the official correspondent of the Institute, Mr. H. M. NICHOLLS, Microbiologist, Department of Agriculture, Hobart, Tasmania.

(3) Communication from the official correspondent of the Institute, Mr. J. DAVIDSON, D. Sc., F. L. S., Entomologist, Waite Agricultural Research Institute, Glen Osmond, South Australia.

(4) Communication from the official correspondent of the Institute, Mr. I. J. NEWMAN, F. E. S., Economic Entomologist, Department of Agriculture, Perth, Western Australia.

Ceylon (1). — The genus *Eurygaster* has not been recorded from Ceylon.

Straits Settlements and Federated Malay States (2). — We have no record at all of the occurrence of any species of *Eurygaster* in this country.

Fiji (3). — I have no record of *Eurygaster integriceps* or other species of that genus as occurring in Fiji.

Guadeloupe (4). — No species of *Eurygaster* has yet been found or reported in Guadeloupe as attacking cereals.

India (Burma) (5). — *Eurygaster integriceps* has never been observed on wheat yet, nor on any other cereals in Burma.

India (Punjab) (6). — *Eurygaster maura* L. was once found attacking wheat in the Punjab.

West Indies (Trinidad) (7). — I have no record of the species of *Eurygaster* occurring as pests in this part of the world.

Japan (8). — *Eurygaster integriceps* is not known in Japan. A species of the same genus, *Eur. sinica* Walker, is found in wheat and barley fields in Kiushiu and Honshiu, however, it is not an important pest.

Madagascar (9). — The presence of *Eurygaster integriceps* has not yet been reported in Madagascar either on wheat or on any other cultivated grasses.

Mauritius (10). — The presence of *Eurygaster* spp. has never been noticed on any cultivated plant in Mauritius.

Nigeria (11). — I have never heard of *Eurygaster* spp. attacking cereal crops in Nigeria.

Netherlands (The) (12). — *Eurygaster integriceps* is unknown in the Netherlands. *Eur. maura*, with the varieties *nigra* and *picta*, as well as *Eur. nigroocullata* exist in the Netherlands, but they are rare. It has never been reported as attacking wheat.

(1) Communication from the official correspondent of the Institute, Mr. F. P. JEPSON, M. A., F. E. S., M. S. E. A. C., Ag. Entomologist, Entomological Division, Department of Agriculture, Peradeniya, Ceylon.

(2) Communication from the official correspondent of the Institute, Mr. N. C. E. MILLER, Ag. Government Entomologist, Department of Agriculture, Straits Settlements and Federated Malay States, Kuala Lumpur, Federated Malay States.

(3) Communication from the official correspondent of the Institute, Mr. H. W. SIMMONDS, Government Entomologist, Department of Agriculture, Suva, Fiji.

(4) Communication from the official correspondent of the Institute, Mr. A. BUFFON, Chef du Service de l'Agriculture du Gouvernement de la Guadeloupe et Dépendances, Basse-Terre.

(5) Communication from the Entomologist, Burma, Mandalay, official correspondent of the Institute.

(6) Communication from the official correspondent of the Institute, Mr. M. Afzal HUSAIN, M. Sc. (Pb.), M. A. (Cant.), I. A. S., Entomologist to Government, Punjab, Lyallpur.

(7) Communication from the official correspondent of the Institute, Prof. H. A. BALLOU, M. Sc., Entomologist, Imperial College of Tropical Agriculture and Imperial Department of Agriculture for the West Indies, Trinidad, West Indies.

(8) Communication from the official correspondent of the Institute, Mr. I. KUWANA, Department of Agriculture, Ministry of Agriculture and Forestry, Tokyo, Japan.

(9) Communication from the Chef du Service de l'Agriculture de Madagascar et Dépendances, Tananarive, official correspondent of the Institute.

(10) Communication from the official correspondent of the Institute, Mr. D. D'EMMEREZ DE CHARMOY, I. S. O., Director of Agriculture, Reduit, Mauritius.

(11) Communication from the official correspondent of the Institute, Mr. F. D. GOLDING, Senior Entomologist, Agricultural Department, Ibadan, Nigeria.

(12) Communication from the Phytopathological Service of the Netherlands, Wageningen, official correspondent of the Institute.

Persia (1). — For the past four years *Eurygaster integriceps* has not caused damage to wheat in the province of Teheran, owing to the well known period of calm which is noted after a vigorous attack; the number of insects is increasing and it is expected that the depredations will begin again in 1930; there will be a steady increase in the amount of damage done, it will reach a maximum and then a decline will again occur.

One of the best control measures has been found to be burning the bushes under which the insect hibernates.

The popular name of *Eur. integriceps* in Persia is sen, in some provinces however it is called sine.

Southern Rhodesia (2). — There is no record of any species of *Eurygaster* attacking wheat in this Colony, nor has any member of this family come to notice as a wheat pest to date.

Siam (3). — From information up to the present time, wheat crops have never been attacked by *Eurygaster* in Siam.

Tanganyika Territory (4). — I am not aware of the existence of any species of *Eurygaster* attacking wheat in this country.

Union of South Africa (5). We have no record whatsoever of any species of *Eurygaster*, occurring in South Africa up to date.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Germany. — By Decree of 7 March 1930 the object of which is to avoid the introduction of the wart disease (*Synchytrium endobioticum*), the importation of potatoes into Germany attacked by this disease or suspected of being so attacked is prohibited.

The importation of potatoes immune from wart disease is only permitted through certain fixed Customs offices and is subject to the following provisions:

(1) Potatoes intended for importation cannot be transported in packing material which has been previously employed nor in bulk in closed trucks. Every package or every truck must bear a seal of the official Plant Protection Service of the country of origin.

(2) Consignments must be accompanied by a certificate delivered by an expert of the official Plant Protection Service of the country of origin, which must contain: the declaration that the consignment despatched has been inspected and found free from wart disease; the sworn statement that the potatoes come from a farm and a zone exempt from the disease, another that all packing material that may have been

(1) Communication from the official correspondent of the Institute, Mr. Ahmed H. ADLE, Directeur de l'Ecole Supérieure d'Agriculture, Keredi, Téhéran.

(2) Communication from the official correspondent of the Institute, Mr. Rupert W. JACK, Agricultural Laboratory, Department of Agriculture, Salisbury, Southern Rhodesia.

(3) Communication from the Ministry of Lands and Agriculture, Bangkok, Siam, official correspondent of the Institute.

(4) Communication from the official correspondent of the Institute, Mr. Wm. NOWELL, D. I. C., F. L. S., Director of the East African Agricultural Research Station (Kenya, Uganda, Tanganyika Territory, Zanzibar, Nyasaland, N. Rhodesia), Amani, via Tanga, Tanganyika Territory.

(5) Communication from the Chief of the Division of Plant Industry, Department of Agriculture, Pretoria, Union of South Africa, to the International Institute of Agriculture.

used is new and has been sealed by an expert ; a description of the consignment showing the name of the variety, place of origin, weight, kind of packing, the designation, the truck number, the addresses of consignor and consignee. A model certificate is annexed to the present Decree.

(3) The consignment must be found to be free from wart disease at the time when the inspection is carried out on the frontier.

Facilities are provided by the Customs office for the importation of potatoes into adjoining regions in the case of farms where the fields lie at a distance from the farm buildings.

The present Decree came into force on 15 March 1930 ; at the same time the Decree of 4 June 1925 (*Reichsgesetzbl.*, I, S. 84) ceased to be in force. (*Reichsgesetzblatt*, Berlin, 13. März 1930, Jahrg. 1930, Teil I, Nr. 6, S. 34-35).

Canada (1). — By Regulation No. 4 (Foreign) 3rd Revision, effective on and after February 17, 1930 the importation of all non-canned fruits or plants into the Dominion of Canada from the Hawaiian Islands is prohibited, except ginger root (*Zingiber* sp.), taro (*Colocasia antiquorum esculentum* Cy.) and the fruits of pineapple (*Ananassa sativa* Schult.), banana (*Musa sapientum* L.), and coconut (*Cocos nucifera* L.), which may be imported provided they have been inspected by an authorized officer of the United States Department of Agriculture and have been certified free from infestation by the Mediterranean fruit fly (*Ceratitis capitata*). Further, all boxes, bales, crates or other containers, shall be marked with the name and address of the consignor and the name and address of the consignee and shall bear the original or duplicate copy of the certificate of inspection.

* * By Regulation No. 18 (Foreign), effective on and after February 17, 1930, the importation into the Dominion of Canada of all species and varieties of wheat, including straw, bran and chaff, from Australia and Asia is prohibited, unless such importation is accompanied by a certificate, issued and signed by an authorized official of the country in which the said importation originated, to the effect that the material covered by the certificate was harvested in a locality where the disease flag smut (*Urocystis tritici* Koernicke) is not known to exist.

* * By Order in Council (P. C. 557) passed on March 12, 1930, Section V of the General Regulations was rescinded and the following substituted therefor :

V. An inspector shall have the power to inspect before export to any foreign country, or shipment within the Dominion, any plant, and to grant a certificate according to the requirements of any country demanding such, or for domestic purposes.

All certificates so issued must bear a copy of the official seal of the plant disease or insect pest inspection service carried on under the Destructive Insect and Pest Act.

In the case of potatoes, no person shall be allowed to sell or offer, advertise, expose or hold in possession for sale, any potatoes in any manner of form described or designated as certified, inspected, registered, selected, disease-free, or otherwise indicating their suitability for seed or seed purposes, unless such potatoes have been inspected in the field and after harvest by an inspector under the Destructive Insect and Pest Act and have been found sufficiently vigorous and free from serious diseases, to warrant them being classed into either of the two following grades viz : Certified Seed Potatoes Grade Extra No. 1, or Certified Seed Potatoes Grade Small Sized (1 ½ - 3 ounces only).

(1) Communication from the official correspondent of the Institute, Mr. A. GIBSON, Dominion Entomologist, Entomological Branch, Department of Agriculture, Ottawa, Canada.

Certified seed potatoes must be contained in sacks, barrels or other containers, to each of which shall be durably attached a certificate in the form of an authorized official tag, issued by an inspector, and bearing the grower's name or number.

Italy. — By Ministerial Decree of 17 May, 1930 the permission is given to the industry of the manufacture of anti-parasitic preparations with nicotine and tar basis to use alcohol adulterated with the usual denaturant in soap solution (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 30 maggio 1930, anno 71^o, n. 126, p. 2136).

* * By Ministerial Decree of 30 May 1930, the Commune of Pescolanciano, in the province of Campobasso, has been declared infested with grape phylloxera. (*Ibid.*, 7 giugno 1930, n. 133, p. 2264).

* * By Ministerial Decree of 8 July 1930 regulations have been made for the temporary importation from abroad of varieties of potatoes, exclusively for use as seed, for the season 1930-1931.

Potatoes allowed to be imported must come from localities immune from degeneration diseases and from the following parasites: *Doryphora* [*Leptinotarsa*] *deceunlineata*, *Synchytrium endobioticum*, *Phthorimaea operculella*, *Heterodera rostochiensis*, *Epithrix cucumeris*. The potatoes must besides be immune from scab (*Actinomyces Scabies*), a 2 % tolerance being allowed, and from any other form of deterioration.

Power to grant permits for the importation of seed potatoes has been delegated to the 'R. Stazione di Patologia vegetale' at Rome, which will make the necessary inquiries for ascertaining the sanitary condition of the potatoes, including inspection of the crops of origin of all countries in which it is considered necessary. The Station will also fix the rules to which consignments authorised by the Customs Office for importation must be subjected.

Consignments of seed potatoes must be made in sacks sealed by the Phytopathological Service of the State of origin and must be accompanied by a certificate of origin and of health in accordance with the model form attached to the Decree above mentioned. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 14 luglio 1930, anno 71^o, n. 163, pp. 2823-2835).

Latvia (1). — The Decree of 16 January 1930 contains the following provisions relating to the import, export and transit of living plants or their parts, to have force from 1 June of the same year:—

(1) Importation and exportation of living plants and their parts is placed under the control of the Ministry of Agriculture. Consignments in transit are subject to inspection in the event of the packages being repacked or unpacked in Latvia.

(2) A communication must be sent to the Ministry of Agriculture in respect of every consignment which it is proposed to import containing plants or their parts, and at the same time there must be presented the certificate of origin and a sworn statement showing that the consignment does not contain diseases or pests or plants capable of transmitting rusts to cultivated plants. The Minister of Agriculture will publish the list of the diseases and pests, as well as of the plants of which import is prohibited.

(3) Consignments intended for export are subject to inspection by the Ministry of Agriculture and sworn statements are given in respect of these only when so required by the importing country.

(1) Communication from the official correspondent of the Institute, Mr. Max EGLITS, Director of the Plant Protection Institute, Riga.

(4) Importation of live plants and of their parts is prohibited whenever the consignment is found to contain diseases or pests.

(5) Importation of live plants and of their parts is prohibited if coming from territories attacked by potato wart disease (*Synchytrium endobioticum*), the Colorado potato beetle (*Leptinotarsa decemlineata*) or by any other dangerous pests. The Minister of Agriculture will publish periodical lists of foreign countries in which the presence of potato wart disease, the potato beetle or other dangerous pests has been reported.

(6) Living plants and their parts the importation of which is prohibited on the basis of the provisions above shown may be imported for scientific purposes only by consent of the Ministry of Agriculture to be obtained on each occasion.

(7) The importation of living plants or parts may take place only through the Customs offices duly authorised by the Ministry of Agriculture in agreement with the Ministry of Finance.

(8) Inspection is carried out by an expert, authorised by the Ministry of Agriculture.

(9) Within three days from the time the result of the inspection is made known, appeal may be made to the Arbitration Committee, which is expected to give its decision within seven days; there is no further appeal against its judgement.

(10) The Arbitration Committee meets at the Ministry of Agriculture and is composed of three members: a competent officer, designated by the Ministry of Agriculture, acting as chairman; a representative of the firm importing the live plants or their parts; a representative of the Agricultural Faculty of the Latvian University.

(11) Costs of inspection are charged to the importer, on the basis of the tariff fixed by the Ministry of Agriculture.

(12) All instructions for giving effect to these provisions will be published by the Minister of Agriculture in agreement with the Ministry of Finance. (*Valdības Vestnesis*, Riga, 10. janvārī 1930. g., Nr. 15).

** The Law of 20 March 1930, relating to the eradication of barberry and buckthorn, contains the following provisions:—

(1) To control black rust of wheat (*Puccinia graminis* Pers.) and crown rust of oats (*Pucc. coronifera* Kleb.) it is necessary to eradicate barberry (*Berberis vulgaris* L.), its variety *B. vulgaris* L. var. *atropurpurea* Hort., and buckthorn (*Rhamnus cathartica* L.).

(2) The eradication of barberry and buckthorn must be carried out gradually by land owners or by holders in usufruct of State lands within a period of three years. In the first year all bushes of barberry and buckthorn must be destroyed in the fields over a radius of 200 metres in width, including those in gardens or meadows. In the succeeding years all the remaining bushes of barberry and buckthorn must be destroyed.

(3) In the event of the landowner or holder in usufruct not having eradicated these shrubs within the limit fixed by the Law, the eradication may be done at the charges of the parties and the costs may be recovered by administrative measures.

(4) The cultivation of the plants referred to in this Law is permitted only with the consent of the Minister of Agriculture, in isolated places and for scientific purposes.

The regulations for the application of the present Law will be issued successively (*Valdības Vestnesis*, Riga, 20. marta 1930. g., Nr. 65).

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[Continuation and conclusion (cf.: this *Bulletin*, Year IV, 1930, No. 6, p. 94). After dealing fully with *Chaetocnema tibialis* Illig, one of the four species regarded as doing most damage in Italy during 1929, the writer mentions the following other

insects which, though less injurious, are however not to be neglected:— *Subcoccinella* 24—*punctata* L., *Cebrio* sp., *Agriotes litigious* Rossi, *Epicauta erythrocephala* Pall., *Gonocephalum pusillum* F., *Phyllotreta atra* F., *Longitarsus pellucidus* Foudr., *Hypocassida subferruginea* Schr., *Cassida deflorata* Suffr., *Sitona humeralis* Steph., *S. lineata* L., *Tanymericus palliatus* F., *Leucosomus pedestris* Poda, *Conorhynchus luigionii* Sol., *Mecaspis caesus* Gyll., *Chromoderus fasciatus* Müll., *Cyphocleonus tigrinus* Panz., *Lixus scabricollis* Boh., *L. sanguineus* Rossi, *Baris spoliata* Boh., *Pentodon punctatus* L., *Athalia colibri* Christ., *Agrotis segetum* Schiff., *Phthorimaea ocellatella* Boyd., *Pegomyia hyoscyami* Panz., *Calocoris norvegicus* Gmel., *Piesma quadrata* F., *Hysteropterum grylloides* F., *Chlorita flavescens* F., *Aphis rumicis* L.].

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[Popular handbook in which the writer deals with the principal diseases caused by plant parasites of fruit plants, industrial plants, cereals, potatoes, vegetables and fodder plants. Then follow three chapters concerning respectively the non-parasitic diseases of the vine and tobacco, and troubles caused by weather and by toxic gases from industrial works].

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[In the various regions of Italy on woody plants (vines, olives, fruit trees, citrus trees, forest trees, ornamental and industrial plants) and herbaceous plants (cereals, fodder plants, vegetables, garden and industrial plants). The presence of *Helminthosporium sativum*, apparently for the first time, on barley in Eritrea, and of *Leptosphaeria herpotrichoides* on oats in Cirenaica are also reported].

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NOTES

Xth International Olive Growing Congress. — This Congress will be held at Athens from 30 October to 14 November 1930. The second Section of the Congress will deal with the diseases and pests of the olive tree.

PROF. ALESSANDRO BRIZI, *Segretario generale dell'Istituto, Direttore responsabile.*

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